Original Article

The Effectiveness of Acceptance and Commitment Therapy on Posttraumatic Cognitions and Psychological Inflexibility among Students with Trauma Exposure

Parviz Molavi, Saeed Pourabdol[1], Anita Azarkolah

Department and Psychiatry, Fatemi Hospital, Ardabil University of Medical Science, Ardabil, Iran, [1]Department of Clinical Psychology, Faculty of Human Sciences, Shahed University of Tehran, Tehran, Iran

ORCID:

Parviz Molavi: https://orcid.org/0000-0001-9879-3309
Saeed Pourabdol: https://orcid.org/0000-0002-8874-9926
Anita Azarkolah: https://orcid.org/0000-0001-5744-548X

Abstract

Background: Posttraumatic stress disorder has a negative impact on the individual, family, and community due to disturbance in social functioning, increased stress, and life-threatening health status. Therefore, effective and useful therapeutic interventions in this area are very important. This study aimed at examining the effectiveness of acceptance and commitment therapy (ACT) on the posttraumatic cognitions of students with trauma exposure. **Methods:** In this quasi-experimental study, population included all students of Islamic Azad University in Roudehen, Tehran, Iran, during the academic year of 2018–2019. After administering trauma questionnaire, the second version of acceptance and action questionnaire (AAQ-II), and posttraumatic cognitions inventory (PTCI) to 500 people, 113 people who experienced trauma and had high scores in PTCI and low scores in AAQ-II were identified. Of whom 40 people were selected randomly. After the clinical interview, the subjects were randomly placed in the experimental group (who received ACT, $n = 20$) and placebo group ($n = 20$). Both groups were pre- and posttested using the PTCI and AAQ-II. Then, the obtained data were analyzed using covariance analysis. **Results:** The results showed that there was a significant difference in posttraumatic cognitions (negative cognitions about self, negative cognitions about the world, and self-blame) between the two groups. In addition, the results of posttest related to ACT had a significant impact on psychological inflexibility. In other words, ACT reduced posttraumatic cognitions and increased psychological flexibility of these students. **Conclusion:** The findings of the present study reveal that despite posttraumatic cognitions of students with trauma exposure, ACT increases value-based behaviors through increasing psychological flexibility and decreasing experiential avoidance.

Keywords: Acceptance and commitment therapy, experiential avoidance, posttraumatic cognitions, post-traumatic stress, psychological inflexibility, trauma

Introduction

Trauma exposure and posttraumatic stress disorder (PTSD) are surprisingly common among students.[1] Almost three-quarters of university students reported that they had experienced a traumatic event and the rates of PTSD among college samples are similar (i.e., 8% to 9%).[2-7] Hence, trauma and posttraumatic stress indicates an effective mental health issue among the said population.[8-11] Several theories emphasize the role of cognitive variables in the development and maintenance of PTSD.[12-21] Moreover, many trauma theories suppose that traumatic events change the victims' thoughts and beliefs[22] and these changes play an important role in emotional responses to trauma. Although these theories highlight the importance of traumatic cognitions, they are different with

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Address for correspondence: Mr. Saeed Pourabdol, Department of Clinical Psychology, Shahed University, Tehran, Iran.
E-mail: saeed.pourabdol@yahoo.com

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respect to the specific cognitions that they are supposed to cause. Moreover, the major finding related to the adult survivor population from interpersonal trauma indicates the relationship between PTSD and distorted cognitions about self, world, and others.[22] Through emphasizing the importance of four core beliefs, Epstein showed that after experiencing a traumatic event these beliefs undergo changes: The world is benign, the world is meaningful, the self is worthy, and people are trustworthy.[22] McCann and Pearlman[20] developed the area of themes influenced by traumatic experience and showed that traumatic events may develop disorders and change people's beliefs about security, trust, power, self-esteem, and intimacy. The results of the related studies have shown that not all victims of trauma develop PTSD and many people who at first develop PTSD recover over time.[22] Only a few studies have conducted on the relationship between the intensity of PTSD symptoms and the thematic concept of maladaptive posttraumatic cognitions among adult samples. Several studies showed that the number of maladaptive post-traumatic cognitions was in line with the intensity of PTSD[23,24] and in particular, the themes such as trust, power, self-esteem, and intimacy showed a strong relationship with PTSD symptoms.[24] The results of one study showed that in terms of cognition related to trauma, only negative cognitions about self was related to the intensity of PTSD symptoms.[25] Tyler studied the relationship between traumatic features and intensity of PTSD symptoms among children and teenagers. Some factors such as gender (female in this case), age, frequency, duration and kind of-sexual versus physical-abuse, as well as the intensity of abuse and the relationship to the perpetrator, were reported as effective factors both in outbreak and intensity of the disorder.[26] Another study showed that the number of posttraumatic cognitions could predict the levels of posttraumatic stress symptoms, but the later (i.e., the levels of posttraumatic stress symptoms) cannot predict the number of posttraumatic cognitions.[27] These findings were in line with the assumption that posttraumatic cognitions play an important role in the development and maintenance of PTSD.

One of the recent psychological treatments that can be effective in reducing the symptoms and consequences of PTSD is acceptance and commitment therapy (ACT). ACT is an acceptance- and mindfulness-based form of behavior therapy founded on transdiagnostic theory,[28] which introduces psychological inflexibility as the main source of psychopathology. Psychological inflexibility refers to the inability to deal with value-based and functional behaviors in the presence of unwanted internal experiences (e.g., negative evaluated thoughts, memories, emotions, and physical sensations). Additionally, ACT has six central processes including acceptance, defusion, self as a context, contact with the present moment, values, and committed actions.[29] One of the key processes driving from psychological inflexibility is experiential avoidance, which refers to the lack of tendency or perceived inability to keep in touch with hard internal experiences as well as habitual endeavors to escape, avoid, or modify these experiences. PTSD is strongly in line with psychological inflexibility.[30,31] The ACT is designed to develop psychological flexibility; therefore, it has the potential of integrated treatment for PTSD.[30] Moreover, ACT is an empirically-based psychological intervention that has shown effectiveness in a number of adult problems[29,32] and can be effective in treating PTSD and trauma among youths.[33] A large body of research indicates that this therapy is effective in decreasing many psychosocial disorders including PTSD. A recent randomized controlled trial in a sample of veterans and military personnel with a spectrum of diagnoses indicated that ACT led to improving PTSD symptoms, function, and the quality of life.[34] Another study showed that complicated symptoms of PTSD decreased among the students with PTSD and compared to the control group, their degree of acceptance and post-traumatic growth increased significantly after treatment and during the follow-up period.[35] Moreover, in a study, it is shown that ACT can decrease PTSD symptoms- and alcohol-related outcomes and can increase the quality of life and improve functional disability in veterans.[33]

Overall, based on the results of the previous studies, it can be said that people who are exposed to trauma and PTSD have posttraumatic cognitions and the obtained results indicate the effectiveness of ACT in dealing with PTSD problems. Therefore, the aim of the present research was to examine the effectiveness of ACT on posttraumatic cognitions among students with trauma exposure.

Methods

This study was quasi-experimental with a control group and a pretest/posttest design. The research population included all students of Islamic Azad University, Roudehen, Iran, during the academic year of 2018–2019. Using multi-step cluster sampling, 587 people were selected to identify people with trauma; of whom, 43 did not fill out the questionnaires. Then, from among 544 respondents, 118 people were selected as those who experienced trauma (at least once) and had high scores in posttraumatic cognitions inventory (PTCI) (a total score of 130 or higher) and higher scores in the Acceptance and Action Questionnaire-II (AAQ-II) (for psychological inflexibility) (scores higher than 50). Finally, 40 people were selected randomly to participate in this study. The included criteria for selection included signing the written consent form to participate in the study, and not using special drugs. The exclusion criteria included lack of cooperation with the therapist and not doing the assigned tasks, being absent in the workshops for more than three sessions, lack of tendency to continue the therapy, catastrophic events such as the death of a family member, divorce, etc., drug abuse, and suffering from physical illnesses. Following tools were used for data collection:

Structured clinical interview

Structured clinical interview to diagnose the mental disorder is a flexible interview designed to diagnose the first axis of

the diagnostic and statistical manual of mental disorders, 5th edition. The interview was used to diagnose and confirm trauma as well as to diagnose disorders related to anxiety, mood, dissociative, and other disorders (in the case of observing their symptoms).

Trauma-related questionnaire

This scale has been developed by Mehrabizade *et al.*[36] This scale has 23 items that evaluate traumas before the age of 18 years. In this scale, the subjects are asked to read each item and answer with yes (scored 1) or no (scored 0). The total score ranged from 0 to 23. The scale showed a suitable psychometric feature in large samples. The Cronbach's alpha reported by Mehrabizade *et al.*[36] was >0.89 for a sample of 120 patients and the reliability reported by the same authors and based on Cronbach's alpha was between 0.91 and 0.93 for a sample of 180 subjects. Researchers reported that the correlation of this scale with Holmes-Rahe Scale was 0.85.[36] To definite construct validity of this scale, a 7-point question ranged from 1 (a little) to 7 (a lot) was used, in which the obtained correlation coefficient was 0.89, according to Mehrabizade *et al.* study.[36]

Posttraumatic cognitions inventory

The PTCI is a self-reporting scale with 36 items developed by Foa and Rothbaum,[37] which measures thoughts and beliefs related to trauma. From among these items, three were trial and were not used during subscale calculation. In this questionnaire, subjects answer the questions based on a Likert's 7-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree).[7] This scale-covered 3 factors including negative cognitions about self (21 items), negative cognitions about the world (7 items), and self-blame (5 items). The subscale of negative cognitions about self measures the extent of one's negative attitude toward self as well as symptoms and thoughts related to hopelessness and strangeness. The subscale of negative cognitions about the world measures one's distrust of others and his/her beliefs related to the insecure world. Finally, the subscale of self-blame measures the degree to which people attribute traumatic events to themselves. Internal consistency of subscales of negative cognitions about self, negative cognitions about the world, and self-blame were 0.87, 0.88, and 0.86, respectively.[37] Moreover, Beck *et al.* showed that the results of factor analysis are in line with the structure of factors in the PTCI questionnaire. Studies conducted on validation of this scale showed significant internal consistencies between the three subscales as well as good concurrent, discriminant, and discriminative validity.[38] In Iran, the reported Cronbach's alpha coefficients for the subscales of negative cognitions about self, negative cognitions about the world, and self-blame were 0.86, 0.67, and 0.70, respectively.[39]

Acceptance and action questionnaire–II

The AAQ-II has been developed by Bond *et al.*[40] It is a 10-item version of the original questionnaire (i.e., AAQ-I) developed by Hayes *et al.*[41] It assesses the structure related to variety, acceptance, experimental avoidance, and psychological flexibility. The higher scores show high psychological flexibility. The psychometric properties of the original version are as follows: the results of 2816 participants in 6 different samples showed that reliability, validity, and construct validity of the scale are satisfactory. The mean of the alpha coefficient was 0.84 (0.88–0.78) and the reliability of its retest after the intervals of 3 and 12 months were 0.81 and 0.79, respectively. The results indicate that AAQ-II scores concurrently, longitudinally, and incrementally predict a range of outcomes, from mental health to work absence rates that are consistent with its underlying theory. This scale is also of suitable divergent validity. It seems that AAQ-II can measure the concept similar to AAQ-I but with better psychometric consistency.[40] The reported internal consistency of this scale in Iran was between 0.71 and 0.89.[42]

Procedure

After selecting a sample of 40 people, a structured clinical interview was conducted to confirm the symptoms related to disorders of anxiety, mood, dissociative, and other disorders (in the case of observing their symptoms). After performing the clinical interview, the subjects were randomly placed in an experimental group (who received ACT, $n = 20$) and a placebo group ($n = 20$). Then, we administered questionnaires of posttraumatic cognitions and acceptance and action-2nd version as a pretest. After performing pretest, the experimental group received ACT. Moreover, five 30-min sessions of group conversation on effective communication, general advice, study methods, and the relationship between girls and boys were held with the placebo group. All the interventions were done by the second researcher in this study. Then, all subjects filled out the questionnaires of post-traumatic cognitions and AAQ-II as a posttest. Maintaining respondents' confidentiality and their complete freedom to participate in the study were among the ethical issues observed in this study. Data were analyzed using the analysis of covariance using the SPSS software version 22. This software was developed by IBM company in Chicago, USA.

Results

This study was conducted on 40 people with trauma exposure. Based on Table 1, The mean ± standard deviation of age was 25.50 ± 5.28 years in the ACT groups and 25.90 ± 5.09 years in the control groups. Among these students in the study, 25 people had an undergraduate education and 15 people had Master's degree. Furthermore, among the students studied, 15 people were married, and 25 people were single (unmarried).

Based on Table 2 and after adjusting pretest scores, the results of posttest related to ACT had a significant impact on psychological inflexibility ($P > 0.001$, $F = 1206.009$), negative cognitions about self ($P > 0.001$, $F = 249$), negative cognitions about the world ($P > 0.001$, $F = 138.148$), and self-blame ($P > 0.001$, $F = 64.959$). Therefore, it can be

concluded that in comparison to the control group, ACT can improve psychological flexibility and post-traumatic cognitions of people with trauma exposure

Discussion and Conclusion

The aim of this study was to investigate the effect of ACT on posttraumatic cognitions of students with trauma exposure. The obtained results indicated that ACT was effective in posttraumatic cognitions of students with trauma exposure. The findings of the present study are in line with those of other studies[30,33-35] and indicate that ACT is effective in decreasing negative PTSD outcomes. This study added to the small body of literature on the effectiveness of ACT as a treatment of PTSD. This finding is in line with that of another study.[43] The results of this study indicated that ACT can be a suitable treatment for those who do not respond to other interventions. Moreover, the findings of this study reveal that as a treatment for PTSD, the effect of ACT is clinically significant on decreasing the intensity of depression and anxiety among patients with PTSD. Another study[44] indicated that web-based ACT was effective in women with trauma-related problems. Through focusing on the techniques of acceptance and concentration, ACT increases the level of accepting negative emotions and feelings among people with trauma exposure and helps them accept the unfortunate event and involve less with that trauma-related thoughts and feelings. Research findings also showed that people who try to avoid or suppress trauma-related thoughts experience them more frequently[45] and PTSD symptoms are more intense among them.[46] ACT is developed to target such cognitive and emotional avoidance; hence, it is theoretically a potential treatment for PTSD.[33]

One of the processes in ACT concerns defusion, which teaches people to consider thoughts as thought and let them come and go, instead of getting caught up in them or allowing them to dictate what you do. When thoughts are considered unreal, people with trauma are persuaded to act according to values instead of reacting to negative thoughts which are not in the real physical world but they are only mental.[47] ACT teaches people to move despite obstacles and observe their negative reactions. Due to some annoying experiences and the consequent experiential avoidance, majority of the people with trauma increasingly become inflexible about trauma-related thoughts, so trying to control their internal reactions and they usually avoid them. One of the goals of ACT is to help such people to react according to their personal values. One of the main goals of the ACT is to help these people practice in ways that are in line with their personal values. They are asked to act based on their values even though they have to do such activities with the presence of negative and unpleasant thoughts and feelings. In ACT, the victims of traumatic events are persuaded to use creative hopelessness intervention to provide a way for these people to consider other ways to affective control and escape and to use these techniques. The therapists use a creative hopelessness intervention when they want to set and clarify the valuable goals of life. Therefore, to achieve valuable goals, one should remove inefficient affective avoidance strategies. In this case, the clients gradually discover the costs of affective control and gain the ability to look for and follow valuable goals of life.[47]

Moreover, in a study ACT was proven effective for the people who experienced different traumas (e.g., violence exposure, sexual abuse, physical abuse, traumatic loss, and natural disaster) as well as for the people who experienced a single traumatic incident and for those who experienced multiple traumatic events.[33] In ACT, experiential avoidance is of great importance for the clients with PTSD. Experiential avoidance in people with trauma emphasized maladaptive

Table 1: Distribution of demographic characteristics of the study groups

Variable	Groups		*P**
	ACT (*n*=20)	Control (*n*=20)	
Gender			
Female	11 (55)	12 (60)	0.343
Male	9 (45)	8 (40)	
Age			
19-25	10 (50)	9 (45)	0.421
25-35	10 (50)	11 (55)	
Education			
Undergraduate	13 (65)	12 (60)	0.114
Masters	7 (35)	8 (40)	
Marital status			
Married	7 (35)	8 (40)	0.114
Unmarried	13 (65)	12 (60)	

ACT: Acceptance and commitment therapy

Table 2: Mean scores±standard deviation of pre- and posttest psychological inflexibility and posttraumatic cognitions

Variables	Group	Pretest	Posttest	*F*	*P*
Psychological inflexibility	Experimental	64.45±2.72	24.55±3.97	1206.009	<0.001
	Control	64.05±3.10	64.60±3.21		
Negative cognitions about self	Experimental	111.55±10.23	74.10±5.98	249.000	<0.001
	Control	111.80±9.37	114.10±11.49		
Negative cognitions about the world	Experimental	33.90±3.09	22.90±3.40	138.148	<0.001
	Control	33.85±3.04	37.50±4.18		
Self-blame	Experimental	29.75±2.61	20.90±3.85	64.959	<0.001
	Control	29.75±3.89	29.80±3.08		

behaviors that is being used to avoid trauma-related thoughts, affections, emotions, memories, and physical feelings. Trauma-related thoughts, affections, emotions, and memories are not psychopathologically by themselves, but trying to suppress or avoid these thoughts and emotions leads to a functional disorder.[48] From among such maladaptive endeavors to avoid trauma-related stimulus, we can name behaviors with diverse structures or conditions such as substance abuse, somatization of mental pain, obsession, self-harming behaviors, and social isolation. Several studies emphasized the dominant role of experiential avoidance in etiology and maintaining the stability of psychopathology related to trauma. Clinical interviewing of a sample of 61 veterans showed that modifying psychological pains and disturbances was in line with the tendency to avoid affective responses to PTSD.[49] In another study, the researchers found that experiential avoidance defined the relationship between psychological stress and sexual harassment during the teenage period. The results of other studies indicate that experiential avoidance was harmful for all psychological outcomes related to female rape victims. These findings emphasized the role of experiential avoidance in the creation and development of trauma-related psychopathology. The ACT model introduces acceptance as other alternatives against experiential avoidance. This type of treatment is effective on victims with trauma exposure, especially because the utilized technology decreases avoidance/change factors and paves the way for the trauma victims to accept their individual history, internal and personal events as well as those of other people. This acceptance provides them with the opportunity to gain a history of events and make some modifications in their lives, which are in line with their own goals and value system.[50]

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Conflicts of interest

There are no conflicts of interest.

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